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The Rejuvenescence of Old Trees.

THE fact that old and apparently decrepit deciduous trees can be rejuvenated by judicious pruning, is not well understood in this country, where old trees, which might perhaps be made to live a century or two, are often allowed to perish unnecessarily. The death of a tree can generally be traced to a gradual failing of vigor due to insufficient nourishment, or to internal decay, the result generally of neglect. The first indication of danger usually appears at the top, and when the upper branches of a tree begin to die, it is a sure indication that, unless radical measures are taken to check the trouble, it can only live a comparatively short time. Vigor can be restored to a tree in this condition by shortening all its branches by one-third or one-half of their entire length. The only care needed in this operation is to cut back each main branch to a healthy lateral branch, which will serve to attract and elaborate, by means of its leaves, a sufficient flow of sap to insure the growth of the branch. This is essential in good pruning, and, if neglected, the end of the branch will die back to the first lateral branch or bud below the cut, leaving a point of danger to the tree. Care, too, must be taken to shorten the branches in such a way that the lowest will be the longest, that the greatest possible leaf surface may be exposed to the light. Figure 1 will serve to show how an ancient Oak should be pruned for the purpose of increasing its vigor.* The vigor of a tree depends upon the power of its leaves to elaborate plant food. The larger the leaf surface exposed to the light, the greater will be the vigor of the tree. The object of pruning, therefore, is to increase leaf surface. If half of a branch of a decrepit tree, bearing small and scattered leaves, is cut away, the leaves which will grow upon the half which is left will be so large that their total area will often be more than double the total area of the leaves upon the whole branch before it was cut. The truth of this statement can be easily verified by cutting down to the ground in the spring a feeble seedling Oak, or, indeed, any young seedling tree, when a tall, vigorous shoot, twice the height and diameter, perhaps, of the slender stem it replaces, will appear at the end of a few months, and, although this shoot will only produce a few leaves, its greater vigor is due to the fact that a larger leaf surface is presented to the light by these few large leaves than by the more numerous smaller leaves of the original plant. The vigor, too, of a tree, can be increased after it has been pruned by a good top dressing of well rotted manure, or of fresh soil applied over its roots; and trees growing on banks can often be benefited by deepening the soil on the lower side. A large body of plant food can thus be supplied without burying any part of the trunk and without injury to the tree.

Fig. 2.

The internal decay by which so many old trees perish, through inability to resist the influence of storms, is caused by dead branches allowed to remain upon the tree or from the stumps of branches left in pruning. It is an almost invariable custom in this country, when a branch is cut from the stem of a tree, to leave a stump a few inches long, as shown in Figure 2. The end of this branch, as it has no lateral shoot to insure a flow of sap, is not healed over with a new formation of wood and bark, and soon dies. Decay thus begins, as appears in Figure 3, and this decay gradually extends into the interior of the trunk, as shown in Figure 4, ruining the tree for any useful purpose, and so weakening the supporting power of the stem, that a severe gale will prostrate it. This decay can be prevented by cutting off dead branches as fast as they appear, and by cutting living branches, when it is necessary for any reason to remove them, close to the trunk or close to a lateral branch. The secret of good pruning lies in cutting close, so that the wound may heal by the formation of a new growth over the cut surface. No matter how large it may be necessary to make the wound, no branch stump, large or small, should be left in pruning. A coating of coal-tar applied to the wound as soon as made will serve to protect it from moisture, and will not interfere with the formation of a new layer of wood.

Fig. 3.

Pruning, so far as the trees are concerned, can be done at any time, except in very early spring, when they are gorged with sap and "bleed" more freely than at other seasons of the year. The autumn, however, is found to be the best time for such work. There is more leisure now than earlier in the season, while the coating of ice which often, in this climate, covers the branches of trees in winter, makes it difficult and dangerous to work among them.

Three men at least are needed to prune a large tree properly, and to manage the long, heavy ladders which this operation makes necessary. One man stands at a little distance from the tree and directs where the cuts

Fig. 1.

*We are indebted to the Trustees of the Massachusetts Society for Promoting Agriculture for permission to reproduce these figures, which are extracted from Monsieur A. des Car's work upon Tree Pruning, of which an English edition was published in 1881, by the Massachusetts Society, under the title of "A Treatise on Pruning Forest and Ornamental Trees," a work in which the whole theory of pruning is clearly explained and illustrated.

shall be made; the second man uses the saw, which must be attached often to a long handle; while the third holds one end of a rope fastened to a belt on the man in the tree, and passed over a branch above his head as a precaution against a fall. Nearly all our forest trees bear severe pruning of this sort, and improve under it. Decrepit Red, Black, White and Swamp Oaks, Black Birches, Beeches, Hickories and Elms have been pruned in this way in the Arnold Arboretum, where many of the trees in the natural woods were perishing from pasturage and neglect. They were covered with dead branches, the foliage upon them was thin and poor, and their dying tops showed that they had but a short time to live. It was important to preserve many of these old trees until a new growth of self-sown seedlings could be brought on to replace them and a covering to the forest floor grown. A portion of these old trees are pruned each year, and those which were operated upon first, or six or seven years ago, show, in their dense, dark-colored foliage, compact habit and vigorous growth, how pruning can, without fresh soil and without the aid of manure, put new life into feeble and dying trees.

Fig. 4.

It often happens that when trees have grown together thickly, as in a forest, they are destitute of lower branches. When such trees are thinned, as often happens in the improvement of grounds, single specimens are left with long, straight stems, and without foliage except at the very top. Such trees, from the point of view of ornamental gardening, are ugly objects, and are, moreover, liable to blow down in the first gale.

But there is no deciduous tree, however tall and unsightly it may be, which cannot be gradually converted into a handsome, branching specimen, by the aid of a saw and a pot of coal-tar.

Flowers in Japan.—II.

THE nurseries of the gardeners who supply the Japanese with the immense quantities of flowers, shrubs and trees they demand are scattered about in the suburbs of the cities. They are well kept and contain a great variety of plants, the most valuable of which are usually very old, dwarfed trees. Singular objects, which are greatly prized, are very old trees, which, to all appearances, are quite dead, but still retain sufficient vitality to send forth a few fresh blooming shoots each spring. Good specimens of such trees are not common, and, on several occasions when I found an unusually fine one, I was told by the gardener that it had been in the possession of his family for two or three generations. Rarity, in Japan, as elsewhere, constitutes a virtue, as I found with regard to some of the most highly prized and expensive plants I saw, the chief recommendation of which was by no means their beauty. A small plant, consisting of half a dozen coarse, Pampas-grass-like blades, was pointed out to me by a gardener as one of his most valuable possessions, his price being 300 yen (about $250). Upon observing my look of astonishment, he assured me that this was not at all an unusual price, and that in former times he might have sold it for double that amount. I was somewhat incredulous, but I learned later, on trustworthy authority, that this was not a fictitious value. These gardeners also arrange flower-shows in their gardens from time to time. One of them, whose place I frequently visited, held an annual Pæony exhibition, which enjoyed more than a local reputation. The potted plants were placed under a light bamboo awning which extended around three sides of the garden. The flowers were placed on step-like shelves, which showed off each plant distinctly. The exhibition was always announced by the newspapers and was generally largely attended. Over 200 varieties, each represented by the most perfect specimens, were shown. There are also numbers of private gentlemen who devote themselves to horticulture and who give annual exhibitions of their productions.

But the most wonderful and elaborate displays of this kind are given every spring and autumn by the Mikado at his private gardens in Tokio, the former being devoted to a view of the Cherry blossoms and the latter and most attractive to a Chrysanthemum show.

Of late these entertainments have assumed a semi-European character. Four years ago, when I attended one of them, the Empress and her ladies appeared in the picturesque and unique old court dress, but now that has been superseded by the European style, which, as can be imagined, deprives the occasion of much of its former charm and interest.

The entertainment is given in a large park-like garden, where a collection of the most varied and perfect specimens of the Chrysanthemum are on exhibition. A number of light, neatly constructed bamboo sheds are erected, and underneath, on the tiers of shelves, specimen after specimen of every possible variety of this favorite flower is shown in the greatest perfection. These plants, each in a separate pot, bear only two or three flowers each, the others having been nipped in the bud in order to bring the few remaining ones to the greatest development. There are, however, a few exceptions, consisting of plants each of which bears several hundreds of very perfect, though smaller, flowers; and, as the stem of every individual flower is strengthened by means of a fine strip of bamboo and drawn by a thread in a position to show it to the fullest advantage, they seem even more numerous than they are. One of the causes that have tended to make the Chrysanthemum such a favorite, may be the fact that it is the last of the long series of Japanese flowers, and continuing until covered by winter's snow. The Chrysanthemum also forms the Mikado's official crest.

Another exhibition of the Chrysanthemum, consisting of large figures, made up entirely of these flowers, of different colors, is very popular with the masses. Several months in advance of the Chrysanthemum season the frame-work of great figures, ranging from life-size to thirty feet in height, is constructed of wood and bamboo. Over this frame-work is a covering of rough wicker-work which outlines the forms of the figures. The head, hands and feet are made of *papier maché*, colored like life. The wicker-work interior is then filled in with great quantities of Chrysanthemum plants in bud. If, for instance, one of these figures is to be represented in a white garment, then the whole surface of the figure is filled in with white flowers. If embroidery is to figure thereupon, the effect is produced by variously colored flowers—yellow to represent gold, etc.—and as the embroidery generally consists of floral designs, it is readily produced by flowers of the shade required. The plants are placed inside of the wicker-work covering, with the thickly massed buds protruding, while the roots are inside. The interior space is then filled with earth, and when the solid masses of blossoms burst into bloom, they form a most harmonious glow of color, and so skillfully are they arranged, that the effect, at the proper distance, is quite deceptive, and gives one a very fair representation of richly embroidered costumes.

These figures are arranged singly and in groups, and represent, as a rule, mythological and historical characters. A favorite among these characters is the great hero, General Benke, in the act of slaying an enormous dragon. Another represents a fair courtesan in rich attire, accompanied by her little maid, who stops and gazes with consternation at an old priest who slowly approaches, and prophetically holds a grinning skull before her. A junk of almost natural size, with life-size figures, generally forms one of the most elaborate representations. Wrestlers

in life-like action, solemn gods and goddesses, without number, are here presented in floral attire, to the admiring multitude who flock in thousands to the spot.

New York. *Theodore Wores.*

A Woodland Tragedy.

TO the conscientiously scientific student of Nature everything that grows may possibly be of equal interest at all times. But I think that for all desultory observers like myself there is sure, from week to week, to be some new thing which, at the moment, specially touches the fancy and seems more interesting than everything besides. A while ago I was all for the Heaths. Any one of their kindred seemed enchanting, and nothing else seemed half so much so. Just now the Sundews have taken their place in my affections. *Drosera rotundifolia* is our common species. This, of course, is one of the things that must be looked for; but if one looks it appears in a hundred spots, each of more fairy-like loveliness than the other. Tiny islets of moss set around with low Blueberry bushes in half-swampy meadows are its favorite stations, where it forms little clumps of half a dozen plants. But I have found one spot where it grows in much greater profusion. Far back from the high-roads, through a wide-spreading growth of young trees and thickly intermingled shrubs—a growth too young as yet to be called a forest—runs an abandoned road, green now over all its length, and often to be traced only by the fact that it lies a little lower than the general surface of the ground. Along this road, at a place which is swampy after rain but dry enough in time of drought, the moss is tangled with Cranberry vines and spotted with patches of Sundews, while if one stoops and lifts the curtain of shrubs and creepers which overhangs the little foot-high embankment on either side, its face is found to be clothed for yards with the round, red, bristly little leaves, each tiny hair bearing its drop of glue, like a diamond awaiting some Titania's ear. Of course the fact that these miniature, jewel-like arrangements are murderous arrangements is what makes them so attractive. Modest and retiring though it is, this tiny plant gives us a chance to see a bit of the great world-drama called the struggle for life in vivid action. Although we know that one plant always lives by the death of another, we do not often see this truth in clearly visible shape. When we do, as when a Dodder is sucking the life out of some tender stem, we suddenly find our interest in vegetable development intensified; and when it is not a plant but an animal that succumbs, the interest grows positively tragic in strength. We may poison or catch flies by hundreds in our rooms and never think of such words as fate or the struggle for existence—the forces in conflict are too unequal. But watch a little, lovely Sundew leaf when a tiny fly alights upon it, sit patiently for some thirty minutes until the insect disappears in a tight, little, red, clammy fist, and the whole panorama of the world's history seems to unroll before the imagination. Perhaps it is because here the usual results are reversed, and, animal and vegetable forces coming in conflict, the weaker-seeming prevail; perhaps it is simply because we seldom think of plants as acting at all, and suddenly find them in what looks like conscious effort; but, whatever the reason, it must be a dull mind that is not thrilled with a sense of the interdependence of all created things, of the awfulness of Nature's methods, the irresistible force of fate, the iron rule of the law that nothing can live but by the death of something else, when he sees a Sundew clasp its victim. Do such words sound too big for so small a drama—for a catastrophe which can be hidden by the curl of a Fern-tip or the fall of a Blueberry leaf? If so, it is because you have never looked long enough at tiny things to realize that what we call size counts for nothing in Nature's mind, whether beauty or significance be her aim, and have never, while realizing this, seen a Sundew catch a fly. *M. G. van Rensselaer.*

Marion, Mass.

Foreign Correspondence.

London Letter.

THE trial plots in the gardens of the Royal Horticultural Society at Chiswick, a few miles from the centre of London, are now full of interest to gardeners and all interested in fruits, flowers or vegetables. For years the Society has made trial of important flowers, fruits and vegetables in order to test their qualities. They invite the principal nurserymen and seedsmen to send collections of particular classes, including their novelties, and all are grown under as suitable conditions as is possible, so that a fair test is given to all, and as the garden of the Society is neutral ground, the trials have much value both to tradesmen and to the gardening public. The subjects vary from year to year. Sometimes it is Peas among vegetables; Strawberries among fruits; Pelargoniums or Begonias among flowers, the subjects being chosen according to their importance, their popularity or the state of the nomenclature of their varieties. By these means one is able to see and inspect in a small area a collection of many varieties, and in this way comparison of qualities can be easily made. These public trials also furnish a check upon the nomenclature, especially in reducing synonymy. For instance, last season, Tomatoes were put under trial. There was a multitude of named varieties, but at judging-time the Committee found so many identical that the number of distinct kinds was very small. This is good work, as it enables the amateur to select the best and shun the worthless sorts.

Among the subjects under trial this year in the way of flowers are China Asters, Ten-week Stocks and bedding Lobelias, and I have to-day been included in the Committee whose work it is to judge these. We found an enormous array of China Asters and Stocks, probably a hundred named sorts, all growing side by side in lines precisely under the same conditions, raised at the same time and planted out simultaneously, and all received the same cultural treatment. The principal exhibitors were, of course, continental firms, as we do not in England save our own China Aster or Stock seeds. Messrs. Vilmorin-Andrieux & Co., of Paris, and Messrs. Benary, of Erfurt, sent most of the seeds for trial, the collections of both being admirable, and it was difficult to say which was best. One who had never seen great collections of these flowers would be astonished at the great diversity of stature, of habit and of color among them. The practice of the Committee is to denote the qualities of the subjects by marks. Thus, one mark is given for good habit of growth, one for form of flower, one for richness, distinctness of color, and so on; but, as a rule, only those sorts that can command three points—that is, are good in habit, in flower and in color—are considered, and the three marks are taken as equivalent to a first-class certificate.

The Ten-week Stocks were a difficult class to judge, as there is such a difference in habit and color among them. I will not attempt to enumerate all the varieties which were counted worthy of a triple distinction, but will select a few. The best of all were comprised in the tall, large-flowered section. The spikes of bloom are massive, and the flowers perfect rosettes, while for profusion of bloom and compactness of growth they are faultless. The selected sorts were blood-red, sulphur-yellow, lilac, violet, light violet and purple, all of which were sent by Vilmorin. Benary's collection contained some very charming colors, and what pleased me most were the subtle half tones, which, I fear, many, who like only distinct and bright colors, would not admit into gardens. One called Ash-gray was a peculiar shade of grayish purple, quite indescribable; another called Chamois was a soft fawn tint, and others called Lilac Rose and Mauve Purple are most beautiful. The difficulty is to find names for them all. The attempt to describe the colors by the names is often a failure, while to give fancy names to each would be absurd and lead to confusion. Some of the dwarf sorts were exceptionally fine, the plants

being not more than six inches high and complete masses of bloom, and one double white variety was singled out as the best of all the dwarfs. The Wallflower, cleaved section, which have shining, not hoary, leaves (as in ordinary Stocks), are a failure as far as this trial is concerned, and so is what is called the Dwarf Bouquet section. They are not to be compared with the tall and dwarf double-flowered sorts.

Among the China Asters we found only a few that were in a fit condition to judge, the plants not being in full bloom. But these very early kinds in full bloom just now are of great value, as they prolong the China Aster season, and what we want is a very late strain which would extend the season over six or eight weeks. The dwarf strains are very popular, as they are compact in growth and extremely floriferous. A few uncommonly fine ones received to-day the full number of marks. Among these in the Dwarf Chrysanthemum section were: Crimson, Scarlet Red, Rose and White, all with large, full flowers, abundantly produced on plants about nine inches high. There is also a strain called the Dwarf Queen, ranging through crimson, carmine rose, purple and white. But the most beautiful Asters, in my opinion, are yet to bloom, and we shall inspect these a fortnight hence. These comprise the Pæony-flowered, Tall Chrysanthemum-flowered, Victoria, Pyramidal, Quilled Pompone and Cockade sections. These China Asters seem to become more popular every year since such fine strains have been obtained. They are capable of producing very beautiful effects in the flower-border and require the simplest culture. The present moist season has suited them well, as they have seldom been finer at Chiswick.

No advance whatever seems to have been made lately in improving the bedding Lobelias, as the varieties on trial, including novelties, do not show any improvement over the old strains.

A collection of Tomatoes is again on trial and a wonderful display of fruiting plants is to be seen. The principal house (100 feet by 30 wide) is crowded with plants in beds and trained to upright stakes. They range from six feet to ten feet high and are profusely hung with fruits, though only to-day 200 pounds had been cut. Of the almost countless varieties two stand out prominently as the finest of the collection. One is called Horsford's Prelude, an American variety, having been sent by Messrs. Horsford & Pringle, of Vermont. It is a wonderfully productive sort, the fruit numbering as many as a dozen or more in a cluster, hanging at regular intervals all up the stem. The fruit is of medium size, smooth, bright red, very succulent and of good flavor. It is pronounced first-class, and is likely to supersede all others, especially for the market. The other favorite sort is Perfection, known under numerous aliases, for it is so good that every firm seemed anxious to call it their own Perfection. It is a very large sort, with perfectly smooth fruits, very fleshy and well flavored. It is showy, and therefore gains a point upon Prelude, though it is not so productive. The value, however, of such a fine fruited sort, is that the fruits fetch fully a penny a pound more in the market than the small kinds, like Prelude, which sells at the moment at six, while Perfection sells at seven pence per pound. A prolific sort is President Garfield, called also King Humbert and Chiswick Red, but it is nowhere, now that Prelude is in the field. All credit is due to the American seedsmen for sending us such a valuable fruit.

London, August 24th, 1888. *W. Goldring.*

New or Little Known Plants.

Pseudophœnix Sargenti.

ON the 19th of April, 1886, in company with Mr. C. E. Faxon, Mr. A. H. Curtiss, and Lieut. Hubbard, of the United States Navy, I landed from the Light-house Tender "Laurel" near the eastern end of Elliott's Key, one of the larger of the Florida Reef Keys, at the house and Pineapple plantation of Mr. Henry Filer. Our attention was at once directed to a solitary plant of a small pinnate-leaved Palm, left standing in the clearing, which, at first sight, was mistaken for an *Oreodoxa*, but the large orange-scarlet fruit at once showed that we had stumbled upon a tree unknown before in the North American Flora, and quite unlike any of the species of Palms known to us. Specimens of the fruit, which was not, unfortunately, fully ripe, were sent to Dr. Wendland, of Hanover, who provisionally pronounced our Palm to be the representative of a new genus, for which he proposed the name of *Pseudophœnix*. A short account of this discovery, with the announcement of Dr. Wendland's new genus, but without characters, was published in the issue of the *Botanical Gazette*, for November, 1886, but it was not until a year later that I received through Mr. Curtiss ripe seed of the *Pseudophœnix*, which was sent to Dr. Wendland, who has drawn up from it generic characters.*

Pseudophœnix Sargenti is a slender, low tree, twenty to twenty-five feet high, with a trunk ten to twelve inches in diameter, and abruptly pinnate leaves four or five feet long, the pinnæ lanceolate-acuminate, twelve to sixteen inches long, bright green above and glaucous on the lower surface. The branching spadix appears from among the leaves; it is (in the only specimen seen by me) thirty-six inches long by thirty inches broad, the main and secondary branches light yellow-green, flattened, and the latter thickened at the base, especially on the upper side, into an ear-like process. The three-lobed fruit, often one or two-lobed by abortion, is a half to three-quarters of an inch in diameter, bright orange-scarlet, and very showy. Only the withered remnants of the flowers have been collected.

A few individuals were discovered scattered through the woods in the neighborhood of Mr. Filer's plantation, and, late in the same year, a grove of them was discovered near the east end of Long's Key by a gentleman from Bay Biscayne whose name I cannot recall. There are about 200 plants, large and small, in this grove, which is represented in the illustration upon page 353, from a photograph made by Mr. James M. Codman at the time of our visit to Long's Key in the spring of 1887. These are the only stations where *Pseudophœnix* is now known, but as the flora of the Florida Reef Keys is Bahaman in its constitution, and probably in its origin, it would be a singular fact if this tree was not found in some of the Bahama group, the plants of which are still very imperfectly known.

The figure of the fruit (see page 355) is engraved from a drawing made by Mr. Faxon. *C. S. S.*

Cultural Department.

Cultivation of Native Ferns.—IV.

Aspidium Goldianum.—As Eaton says, "This is one of the very finest and largest species of the Eastern States." In even choice collections this species will always be one of the prides of the owner on account of the size, color and beauty of the fronds and comparative rarity of the species. Its early summer growth is tipped and bordered with vivid golden green. The mature frond takes on a deep, rich green of much beauty. Rich soil. Two and a half to four feet. Fronds on one fine specimen measure four feet two and a half inches.

Aspidium Filix-mas.—A strong, fine-growing, half-evergreen species of great beauty. Under high cultivation this produces splendid masses of fronds. Thirty to forty inches.

Aspidium marginale.—An attractive common species. The half-evergreen fronds grow in a handsome vase form. Grows finely in rich soil; but will grow in extremely poor and dry situations. Eighteen to twenty-nine inches.

* *Pseudophœnix Nov. Gen.*, Herm. Wendl. Gaussiæ affinis.
Fructus *stipitatus drupaceus* cerasiformis aurantiacus, *1 carpellis 1-3 globosis* stigmatum residuis basilaribus vel in fructibus lobatis lateralibus vel centralibus, epicarpio coriaceo, mesocarpio grumoso, *endocarpio tenuiter vitreo-crustaceo.* Semen liberum subglobosum erectum, hilo basilari, raphe adscendente *utrinque ramis 2-3* manifestis curvatis, albumine æquabili; *embryo basilaris.*
Fl. fem. in fructu: *calyx parvus* pateriformis leviter 3-denticulatus. Petala 3 ovata obtusa, viridia *refracta.* Staminodia 6 *manifesta* apice atropurpureo.
— Palma mediocris, erecta, foliis pinnatisectis, segmentis *duriusculis ima basi valde replicatis.*
Species 1. *P. Sargenti*, Herm. Wendl. Elliott's Key, Florida.

Aspidium spinulosum.—This common and handsome sub-evergreen Fern is one of the mainstays of the Fern garden. In good soil well established plants send up abundant fronds to a good height from the stout root-stock. Of easiest possible culture, growing finely even in poor and dry soil. Two to two and a half feet. The varieties intermedium and dilatatum are both as desirable as the type. A fine plant of the latter variety measures thirty-seven inches in height.

Aspidium Boottii.—Very close to *A. spinulosum.* Remarks and culture the same as for that species. Two and a half feet.

Aspidium fragrans.—This rare Fern is difficult to cultivate; one can hardly expect to grow it more than a few years. Evergreen. Plant in rather dry, well-drained clefts in rocks, and cover with a frame in winter, or plant in pots wedged in with stones. Peat and leaf-mould. *Four to ten inches.*

Aspidium aculeatum, var. *Braunii.*—This rare and beautiful sub-evergreen Fern is one of the choicest of our natives for cultivation. Fronds deep, rich green and chaffy; very distinct, easily grown. Fifteen to nineteen inches. The type of this species and the closely related *Aspidium angulare*, natives of Europe, are both very handsome and desirable Ferns to cultivate. They do well with a frame protection in winter, and may be perfectly hardy, as is our variety.

Cystopteris fragilis.—A very charming little Fern of easy culture. Will thrive under very various conditions of moisture or sunshine. Nine to twelve and a half inches.

Cystopteris bulbifera.—This, when well grown, is one of the most beautiful and interesting of our native Ferns. It wants a moist, cool spot, and then will develop fronds of surpassing grace and beauty. It increases very rapidly by bulblets,

Fig. 55.—Pseudophœnix Sargenti on Long's Key, Florida.—See page 352.

Aspidium Lonchitis.—This handsome evergreen Fern is, unfortunately, difficult to grow. Peat and leaf-mould. A native of the far north and north-west. Frame. *Six to eighteen inches.*

Aspidium acrostichoides.—A very fine Fern in cultivation, its thick, glossy, rich evergreen foliage being fine by itself, or as a contrast with lighter green species. The variety Incisum is very handsome, deeply cleft individuals being almost suggestive of Holly leaves. The fronds of this species are used by the trade extensively in winter in making up bouquets, and it might, therefore, pay to grow it commercially. Eighteen to twenty-two inches.

Aspidium munitum.—A handsome evergreen species from the north-west, well worth cultivating. Not hardy; but at the Botanic Garden in Cambridge it does well with a frame in winter. Fifteen to eighteen inches.

which fall to the ground and root freely. The bed should be thinned out and the plants reset occasionally to get the best results. It is very fine grown at a little elevation, as on a moist bank or portion of the rock-work; the graceful fronds can then show off to greatest advantage. Twenty-four to thirty inches.

Onoclea sensibilis.—This Fern is very desirable on account of its distinctness and possibilities under cultivation. It might be overlooked by a cultivator on account of its commonness; but it would be a great mistake to omit it from the Fern-garden. The broad, light green frond is an object of great beauty, intermingled with darker species, and with good culture attains fine proportions. Two and a half to three and a half feet.

Onoclea Struthiopteris.—This splendid Fern is capable of producing very grand, almost sub-tropical effects, when well

grown, and in quantity, or as a single specimen plant, forms a striking object in the Fern-garden. In spring the pinnæ of the young fronds overlap one another in a graceful fashion, suggestive of the form seen in well curled ostrich plumes. Gradually the fronds push up until they attain a height of four feet or more in fine specimens, and spreading out in a vase-like form from the abbreviated, tree-like base, make truly splendid Fern effects. The brown fertile fronds come up in midsummer and give a pleasing contrast to the green, sterile fronds. It increases rapidly by sucker-like, running root-stocks. These should be dug up occasionally and planted elsewhere, or otherwise disposed of, as they will interfere with the main plants if allowed to remain. Four to four and one-half feet.

Woodsia glabella and *W. hyperborea* are delicate little Ferns, growing naturally in shaded clefts of rocks trickling with moisture. They would be both difficult to cultivate, and had, perhaps, best be attempted in a Wardian case in a very cool green-house. Only *W. hyperborea* has been grown by me or seen under cultivation. *W. glabella. One to four inches; W. hyperborea. Two to six inches.*

Woodsia Ilvensis.—Grows in dense clumps of extremely pretty chaffy fronds. When young the fronds are almost silvery from a thick coating of chaff. Plant in well-drained, sunny spots, with rocks. Very attractive in cultivation. Two to five inches.

Woodsia obtusa.—A very pretty Fern, not difficult to grow. Peat and leaf-mould. A plant at the Botanical Garden in Cambridge measures ten inches.

Dicksonia pilosiuscula.—A handsome, desirable species. Fronds quite tall, light green, sweet scented. A fine Fern for covering bare spots with a dense, carpet-like growth. Grows freely in any situation. Two and one-half to three feet.

Lygodium palmatum.—This, the Hartford trailing Fern, is one of the most striking and attractive of all our native species. Rather difficult to get established, but, judging from a fine clump in Dr. Henry P. Walcott's garden in Cambridge, it does well after it is established.* Two feet, growing taller as the season advances.

Osmunda regalis.—A fine Fern, very distinct from the two following species. In spring the fronds come up, of an exquisite reddish brown, passing into green, and the brown stems are covered with a bloom. The color and form and grace of the young fronds have an indescribable charm. Later the fronds push up till they reach a size entitling this Fern to highest rank amongst the showy native species. The popular name of Royal Fern was given to this species in England, where it attains a much greater size than in this country. Moore, in "The Ferns of Great Britain and Ireland," says it attains the height of six to eight or even ten to twelve feet in damp, sheltered situations. A splendid specimen, seen growing in an artificial bog at Kew Gardens, towered above the head of a tall man. In cultivating this fine Fern, as well as the two other species of the genus, secure the largest roots possible and plant in the dampest spot in the garden; a natural or artificial bog will be found best adapted for their needs. The specimens measured are grown in ordinary garden soil; but even then good results may be obtained. Three to three and one-half feet.

Osmunda Claytonania.—The sterile fronds of this species are quite similar to those of *O. cinnamomea*, but the fertile are combined in a single frond, with a sterile portion unlike that species. It is a very handsome Fern, particularly when in fruit. Culture the same as for *O. regalis.* Forty to forty-six inches.

Osmunda cinnamomea.—One of the finest and most distinct of our native Ferns. The delightful woolly fronds come up in spring strong and vigorous, with a beauty peculiarly their own. In early summer the fertile or flowering fronds, as they are called, form a fine cluster of cinnamon-brown spikes in the centre of the vase, forming tall, green fronds, producing a very fine effect. In autumn the fronds commonly change to a rich reddish or golden yellow. Culture as for *O. regalis.*† Three to three and one-half feet. These measurements could doubtless be much exceeded under favorable circumstances.

The Botrychiums are a difficult group to handle, and I have never seen them successfully established under cultivation. For a year they will grow well, and sometimes two or three years they survive; but they eventually become smaller and smaller and soon disappear. Many plants known to the horticulturist will not bear transplanting, and this may be such a case, so that if grown from spores where they were to remain, Botrychiums might be successfully cultivated. *Botrychium Virginianum* is the strongest and tallest of our species, and Mr. Robinson says it is the easiest to cultivate; it would, therefore, probably be the best species to attempt to grow by means of spores. Leaf-mould and peat. Eight to twenty-four inches. Mrs. P. D. Richards, of West Medford, has grown *Botrychium ternatum*, var. *dissectum*, in pots successfully for a limited period. There are four other species of Botrychiums indigenous to New England, but they are omitted, as no cultural remarks can be made concerning them.

Ophioglossum vulgatum.—This Fern, like the Botrychiums, may be considered difficult to cultivate. It may be grown for a short time in pots in peat and leaf-mould, and perhaps, with similar treatment, in the open ground. *Two to twelve inches.*

In the following lists the Ferns not indigenous to New England are designated by an asterisk, and an interrogation mark signifies that a Fern questionably belongs to a list, and that it may more properly be considered under one of the other lists.

Perfectly hardy Ferns, easily grown and desirable for general cultivation:

Polypodium vulgare.
Pteris aquilina.
Adiantum pedatum.
Asplenium ebeneum?
" *angustifolium.*
" *Thelypteroides.*
" *Filix-fœmina* and varieties.
Phegopteris polypodioides.
" *hexagonoptera?*
" *Dryopteris.*
Aspidium Noveboracense.
" *Thelypteris.*
" *cristatum.*
" " var. *Clintonianum.*
" *Goldianum.*
" *Filix-mas.*
" *marginale.*
Aspidium spinulosum and varieties.
" *Bootii.*
" *acrostichoides.*
" " var. *incisum.*
" *aculeatum*, var. *Braunii.*
Cystopteris fragilis.
" *bulbifera.*
Onoclea sensibilis.
" *Struthiopteris.*
Woodsia Ilvensis.
" *obtusa.*
Dicksonia pilosiuscula.
Lygodium palmatum?
Osmunda regalis.
" *Claytoniana.*
" *cinnamomea.*

Ferns requiring the protection of a frame in winter, but easily grown with that care:

**Polypodium Californicum.*
**Lomaria Spicant.*
Asplenium Trichomanes.
" *ebeneum.*
**Scolopendrium vulgare.*
Camptosorus rhizophyllus.
Phegopteris hexagonoptera.
* " *calcarea.*
**Aspidium Nevadense.*
* " *munitum.*

Ferns more or less difficult to cultivate, and best grown in pots, or with the protection of a frame in winter:

Pellæa gracilis.
" *atropurpurea.*
Cryptogramme acrostichoides.
Woodwardia angustifolia.
" *Virginica.*
Asplenium viride.
" *Ruta-muraria.*
Camptosorus rhizophyllus.
Aspidium fragrans.
* " *Lonchitis.*
Woodsia glabella.
" *hyperborea.*
Botrychiums.
Ophioglossum vulgatum.

Boston. *Robert T. Jackson.*

*The species is considered as indigenous only to the United States; but, curiously, Dr. Walcott's plant was sent to him from Europe, and was said to have come from Japan.

† *O. cinnamomea* is the only Fern, as far as observed, that seems to be truly affected by cultivation. The lower divisions of the pinnæ in several plants in the writer's collection are produced and are themselves pinnatifid. Eaton notes this as occurring sometimes in luxuriant wild specimens. The character varies in degree or may be wanting in different seasons on the same plant. A plant of the variety frondosa also varies in different seasons and individual fronds in showing its varietal characteristic.

Dutch Bulbs.

HYACINTHS, Tulips, Crocus, Narcissus and the like now claim attention. Complaints are often made that these bulbs do not succeed; they either winter-kill or fail to produce such flowers as the catalogues promise, or such even as are seen when the bulbs are grown in pots, and every year comes the repeated question, "Why did we fail?" For the failure there may be many causes, and the first is the neglect to plant the bulbs at the proper season. While these bulbs all require perfect rest, when they may be kept as dry as seeds, it does not follow that they can remain out of ground beyond a given time without injury. For the best success all Dutch bulbs should be planted by the first of October, and, if worth planting at all, it should not be deferred until November, because by that time they commence growth, and when this goes on in their dry state their vitality is impaired.

The next cause of failure, and the most important of all, is

the general impression that these bulbs are hardy. Hyacinths, Narcissus and many other Dutch bulbs are not hardy, and are not so considered by those who cultivate them for sale. In Holland the beds are mulched with the reed, so common on the borders of their canals, so that it is impossible for the frost to penetrate the earth at all. This precaution is needed in this country more than in Holland, because of the constant and severe changes of temperature. Our experience has taught us the necessity of mulching so thoroughly that frost cannot even enter the ground, much less reach the bulbs. With this precaution we can grow the Hyacinth as successfully as the celebrated Dutch growers, although we have more, in the way of climatic changes, to contend with, than they.

A great difficulty is the marked change in temperature so common in April or May, when the flowers appear. Some suitable covering for the bed should be at hand, ready for use when required, and thrown over the plants when there is danger of a severe frost.

The best mulching we have ever tried, and the most natural one, is newly fallen leaves, always abundant in the garden; cover the bed to the depth of a foot, and keep the leaves from getting scattered about by a layer of evergreen boughs; if these are not convenient, use brush of any kind or old boards; whatever is the easiest to obtain is the best to use.

The Polyanthus Narcissus is still less hardy, in fact it will not endure freezing, and therefore must be carefully protected.

Tulips are hardy, but they will produce far finer blooms if moderately protected, and the same may be said of Crocus.

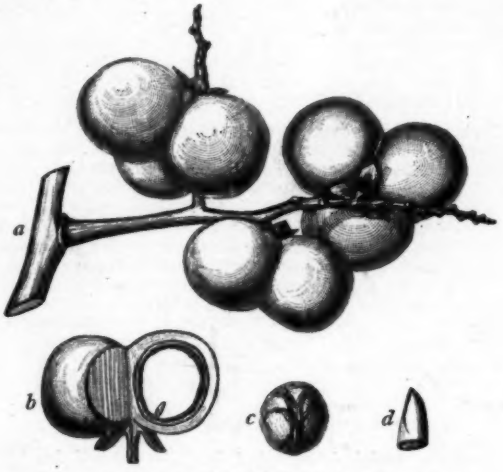

Fig. 56.—Fruit of Pseudophœnix Sargenti.—See page 352.

a—Portion of a panicle (natural size). *b*—Section of a Fruit.
c—Seed, showing raphis. *d*—Embryo.

The most suitable soil for Hyacinths is a light, rich, sandy loam or clear sand; but they will do well in any good garden soil. To grow them to perfection, however, special treatment is necessary, and no plants require more care to keep them from degenerating than the Hyacinth. They are strong feeders, and the soil cannot very well be too rich, if they are to produce strong spikes of flowers. No fresh or rank manure, however, should be used on any account. Thoroughly rotted manure from the cow-stable is the best, and it should be placed a foot below the surface of the bed.

In making beds for Hyacinths the ground should be dug to the depth of at least fifteen inches, and proper provision should be made for effectual drainage. Six inches of manure should be placed at the bottom and covered with four inches of soil; upon this place the bulbs, say five inches apart each way. If the soil is heavy and tenacious, cover the bulbs with a little coarse sand, then cover the whole with soil so that the crowns will be at least five inches below the surface. Hyacinths can be grown fairly well without this care, but perfection of bloom, for which every cultivator should strive, requires all the care here recommended.

The selection of the bulbs is, to a considerable extent, one of individual taste as regards colors and variety of form, but a few rules can be laid down for general use. Choose the heaviest and most solid. Size is not of so much importance, except for forcing in pots or glasses, when the largest and best should be chosen. For the open border, medium or small bulbs are preferable, as they will remain longer in the ground without division, giving annually fine spikes of bloom. The cost of second-sized bulbs is considerably less than larger ones, and that, too, is a point in their favor.

As a spring flower for garden decoration nothing can surpass the Tulip. The finest varieties of these bulbs can now be obtained at prices that will permit their general cultivation, and with a little care they will rapidly increase. The Tulip delights in the same soil as the Hyacinth, and it should be prepared in the same manner. The bulbs should be placed four or five inches below the surface, according to size, and it is important that each variety should be put in at a uniform depth to insure simultaneous display. Tulips will do well planted any time before the ground freezes up. They do better by far if planted much earlier—in fact, as early as they can be obtained.

The hardy varieties of Narcissus, now very popular, should be planted in quantity, especially in those spots where it appears naturally at home, such as under the shade of trees and in shrubbery borders. There is now an awakened interest in the many forms of double and single Narcissus (Daffodils), and they are certainly most effective garden flowers. All the varieties should be grown in clumps and patches in every spot which is suitable and vacant. In any out-of-the-way place large quantities of *N. poeticus* should be planted for a supply of cut flowers. Their graceful appearance renders them peculiarly valuable for this purpose, and if cut when partially opened, they will develop in water and last for many days. In planting be guided by the size of the bulb, allowing four or five inches between small sorts, and five or six inches between the larger varieties. Bulbs of Narcissus may remain undisturbed for many years, and annually improve in the quantity and quality of the bloom. Soil is a secondary matter with the Narcissus; a moderately heavy one is to be preferred, but they will grow almost anywhere.

The Crocus must be planted early to succeed. If kept out of the ground until November it will never regain its lost vitality. Plant in September if possible, and in no case after October. These bulbs will grow in any soil, and do fairly well for many years undisturbed. Make the soil very rich, cover the bulbs two inches, and protect the same as Hyacinths.

Snowdrops are about the earliest spring flowers, and particularly desirable because of their willingness to bloom under all circumstances. It seriously injures these bulbs to remain long out of ground; therefore plant early, about two inches deep, and, if possible, where they may remain undisturbed for many years. In moist, shaded places they will form dense masses, completely driving out all other herbaceous vegetation.

Crown Imperials can only be grown to advantage in gardens, and stately plants they are. They demand a rich, light soil and an open position. Carefully protect against frost, for although frost hardly injures the growing plant, the bulbs are always injured by freezing.

C. L. Allen.

Queens, N. Y.

The Vegetable Garden.

OLD plants of Globe Artichoke now show many dead leaves and flower stems, which should be cut and removed. Have the frames, sashes or other protectors ready to place over the Snap Beans, Cucumbers and Tomatoes, to save them from frost. If Brussels Sprouts show no tendency to sprout pinch the points out of a row of them; this will induce them to form side sprouts early, but these early sprouts are not likely to be solid; only those that appear naturally can be depended on. If Cabbages or Cauliflowers are hearting too soon, pry up the plants a little with a digging fork, then pack the ground solid about them again; this checks their growth. Keep young Carrots, Beets and Turnips thoroughly clean, and hoe them every week. Sow a little Chervil for use in spring, and, if desired for winter, sow some in a frame. Sow some Corn Salad in a frame in rows six inches apart. As this is a small growing vegetable it should be sown thickly. German Greens can be sowed in rows, fifteen inches apart, in rich but well-drained ground out-of-doors, for use in spring. This crop should be lightly mulched with sedge, sea thatch or dry leaves in winter. Erfurt Cauliflower and Wakefield Cabbages were formerly sowed about the 20th of September to be wintered in cold-frames and planted out for early spring crop, but we are more successful with plants raised in the greenhouse or hot-bed in February or the 1st of March. But in the Southern States fall sowing is still much practiced. Early Celery should be earthed up as required, but banking the late winter crops should be delayed. Never handle Celery while it is wet with dew or rain. Put in a large sowing of Lettuces for winter use. Sow them out-of-doors and early in October prick them closely into a cold-frame. Salamander is the best

for use before Christmas; after that, Boston Market; but both must be sown now. Lettuces planted out in the open garden after this time of year will not be likely to mature before frost destroys them, but, if planted now, the half-grown Lettuces can be lifted into the frames in October. It is from the frames thus filled that our supply of young plants is drawn for hot-beds between November and February.

Winter Spinach should be sown now. If it is to be left uncovered over winter, sow the Prickly-seeded; if it is to be protected by frames or mulching, the Round-seeded will be just as good and rather more prolific. The soil should be rich, and have a warm, sunny aspect, sheltered from cold winds, and so well drained that water cannot lie upon it in winter. If in the open garden the rows may be fifteen inches apart. The ground set apart for Winter Spinach has been occupied during the summer by green-house, winter-flowering plants, which we are now lifting and potting. Last year we used ground that had been cropped with early Melons. Field mice are so numerous and destructive here, that it is useless to try Spinach in the open ground and mulch it in winter; we cover our crop with cold-frames. The land is marked off in strips eight and one-half feet wide; this gives strips six feet wide for the frames, with two and one-half feet for passages between them. Seven rows, ten inches apart, running lengthwise, are then marked off to each string of frames, and this leaves a few inches between the outer rows and the sides of the frames. The frames may be laid down now or in November, but must not be covered with sashes till sharp frost occurs. Spinach sown now will yield a good picking in about five or six weeks after sowing, but, except to thin it where it is too thick, it should not be picked clean. During the winter months there is no need to exclude frost altogether; sashes, straw mats and extra sashes or shutters over the mats in the case of very severe weather, will answer, if in early December the frames are banked with earth, leaves or manure.

Onion sets are often planted in fall so as to save time in spring. This should be done early, so as to get them well started before winter sets in. Use light, warm, dry soil, and plant in rows marked off four inches deep and a foot apart. Yellow Danvers, Red Wethersfield and Southport White Globe are good Onions for this crop. To insure a good crop, these Onions should be mulched in winter to prevent "scalding" and frost heading, so, taking all things into consideration, it is better not to plant out any in the fall, but wait till early spring. Many gardeners sow a bed of Danvers Onions early in September and mulch it in winter, to supply green Onions early in spring. *Wm. Falconer.*

Glen Cove, L. I.

Fay's Prolific Currant.—The commendation of this Currant by Mr. Williams, in the issue of Garden and Forest for August 8th, is none too emphatic. In my experience with the newer small fruits, I find it is the one which meets all the claims made for it by its originator and propagator. And, by the way, is Mr. Josselyn, its propagator, a descendant of the Josselyn who, in 1672, published "New England Varieties of Red and Black Currants"?

About six years ago I purchased a single plant of Fay's Currant for one dollar, and, in my ground, it has justified all the promises made, and wherever I have seen it growing in New Jersey it has been far ahead of the Cherry or Versailles in production, while in size and quality it is their equal, to say the least.

I have a dozen bushes propagated from the original one, and this year have picked eighty-four quarts, or an average of seven quarts to each plant, the bunches of fruit being from four to five inches long, while many measured fully six inches. The space between the base of the stem and the first berry greatly facilitates the work of picking and saves the fruit from being crushed. The Cherry and Versailles set their fruit close up to the old wood, and in a compact mass, which makes picking difficult.

In size I find Fay's as large as the Cherry or Versailles in their best condition, more full of juice and of superior quality.

I never found a Currant so satisfactory for jelly and table use, and, if picked at the right time, it makes more jelly and in less time than any other variety. In fact, I have discarded all others. It may be doubted whether any expert, with his eyes shut, could distinguish the flavor of Fay's and the Cherry at their best, while in appearance Fay's far excels all others.

With berries half an inch in diameter, and bunches from four to five inches long, and the bushes literally loaded, it would seem that perfection in Currants had been reached. But it possesses one more good quality, namely, that all sound wood grown this year will bear a full crop next year. There are no dormant buds, and, in this respect, it differs from other varieties. *Chas. L. Jones.*

Newark, N. J.

China Asters.—Comet maintains its reputation as being one of the most beautiful, large, rose-purple, spreading-petaled varieties. But while each plant produces about a dozen flowers, only a few of them are of full size and perfect. Dwarf White Queen is the best white Aster here. It is small, but not bunchy in habit; very free flowering, and the flowers are large, full-double, pure white, and the most of them are large sized. It is earlier than most other varieties, and the plants in the row are of perfectly even size. It seems to be a selection from the Chrysanthemum-flowered section. The New Dwarf Crimson Queen is, except in the color of its flowers, which are purplish-crimson, an exact counterpart of White Queen. Diadem is a new type of Aster, and a novelty of this year. It is a compact-growing, upright, much-branched variety, with small, crimson-purple flowers edged with a band of white. Our plants are now in bloom, and the poorest of any Asters of any type we have. The flowers are very imperfect, and the white band indistinct. After the type has been properly fixed and the band well defined, no doubt this will become a desirable flower. Triumph is one of this year's novelties. It is a dwarf, compact, free-blooming variety, but later in blooming than other China Asters. It is described as "eight or nine inches high." "The flower-heads are from two and a half to three inches across, very perfect in form, with incurved petals of a pure scarlet when first expanded, changing to satiny deep scarlet." Our plants of it are now in bloom, and are about nine inches high, compact, with ten or fifteen medium-sized flowers on each, and these flowers are of a bright purplish-crimson color, and not scarlet at all in any stage of their growth. Did any one ever see a scarlet-flowered China-Aster of any sort? *G. C.*

Asclepias atrosanguinea aurea is one of this year's novelties. It is described as a Bolivian species resembling *A. Curassavica* "in habit, but is much more effective; its numerous flowers, borne in large, dense umbels of a deep blood-red, with a golden-yellow corona or centre." This plant and *A. Curassavica* are growing along-side of each other, and are now in bloom. They are both from seed sown in the green-house last spring, and the seedlings planted out in the open garden, where they now are blooming. The flowers of the *A. atrosanguinea aurea* are of a deeper and brighter color (exactly as described above) than those of *A. Curassavica*, but, except in this slight variation in color of blossoms, the two species, so-called, seem to be identical. *F.*

Notes from the Arnold Arboretum.

Vitex incisa, which is now in flower, is a small, bushy tree or tall shrub, with erect branches, which are covered with compound, digitate leaves, composed of five to seven lanceolate, deeply pinnatifid leaflets, and terminated with spike-like clusters of handsome blue flowers. The stems are sometimes killed back in severe winters here, but as the flowers are borne on the new growth this does not interfere with the blooming of this really desirable plant. It is a native of northern China, where it seems to be common on mountain-sides. The well known Chaste-tree (*Vites Agnus-Castus*), a native of the country surrounding the Mediterranean, is not hardy in the Northern States. The other Asiatic species, of which there are two in Japan and a third in northern China, are not in cultivation probably.

Panax sessiliflorum is a native of the Amoor country. It is here a stout and very hardy shrub, with erect, unarmed stems, three or four feet high, and covered with pale brown bark, upon which are many small, darker, wart-like growths. The ample, yellow-green, ternate leaves are borne on long, stout petioles, and quite cover the stems from the ground upward. The flowers are small, with dark purple corolla and stamens, and are aggregated in spherical heads, which are borne on stout stems in short, erect racemes from the axils of the upper leaves. This plant has been in bloom now for more than a month, and it will continue to produce its handsome heads of flowers until the appearance of frost. This peculiarity, the neat, compact habit and great hardiness, make this a desirable garden plant. Its real claim, however, upon the attention of planters, lies in the fact that the flowers are followed by heads of shining black berries, which remain upon the branches bright and fresh until the appearance of the new leaves in spring. The number of shrubs which carry their

fruit fresh through the severe winters of the Northern States is so small, that any addition to the number is welcome.

Clematis Flammula, a native of southern Europe, is a well known garden plant, having been cultivated for three centuries at least. It is a vigorous grower, and its pure white, fragrant flowers are not, perhaps, surpassed in beauty by those of any of the small-flowered, summer-blooming Clematises. A variety of this, a more vigorous and freer-blooming plant, is known in nurseries as *C. Flammula robusta*. It should find a place in every garden in which there is room for a rampant climber capable of covering in the course of a few years a space twenty feet or more square. The stems grow late in the season, and so are often killed back in severe winters; but this pruning only increases the vigor of the plant, and stimulates it to a stronger growth, and more profuse, although a later, blooming. Here the flowers are just opening, and will continue to appear until destroyed by cold weather. Mr. Dawson finds this plant slow and difficult to propagate either by layers or cuttings.

Clematis Pieroti is flowering in the Arboretum for the first time. It is a pretty, delicate Japanese species, with small white flowers and pinnate leaves, the pinnæ sharply and deeply serrate, with prominent veins, covered with short, oppressed hairs, which appear more sparingly on the upper surface. This is an interesting and rather valuable addition to the list of summer flowering, climbing plants, although in habit and in flower it is not unlike our native *C. Virginiana*. It blooms, however, several weeks later. *C. Pieroti* is apparently perfectly hardy.

Cissus Japonica is one of some twenty-five Asiatic, African and Australian species which constitute Planchon's section *Cayratia*, distinguished by the inflated corolla, with spreading petals, devaricately branched cyme, and by the annual stems proceeding from large, tuberous roots, which, in the case of *C. Japonica*, are able to support the climate of our Northern States. The stems are four or five feet high, sharply angled, climbing by means of stout tendrils. The leaves are three to five foliate, long petioled, dark green and lustrous. The sub-axillary cymes of flowers are long-peduncled, widely, dichotomously branched. The flowers are short pediceled, the base of the corolla distinctly swollen, with ovate, triangular, pale rose-colored petals. The fruit, which is hardly as large as a pea, is crimson. This is a widely distributed plant from Japan through many of the East Indian Islands and New Caledonia to tropical Australia. It has little value as an ornamental garden-plant, but much interest as representing a curious form of the Grape Vine.

September 3d. *J.*

The Forest.

A New Forest Law in Russia.

WHILE our own Government refuses to take any judicious action looking towards the preservation of our forests, or, to state the case more correctly, while public opinion here is not sufficiently educated on the subject to command its expression in intelligent laws, or to enforce such laws even if they were enacted, the other nations of the world are making efforts to save themselves from the disasters which follow unchecked and unregulated tree cutting. The latest Government to adopt measures for saving its forests is Russia, where, for generations, timber has been recklessly felled and forests plundered. It has long been admitted that stripping the forest cover from the sources of her streams has brought serious changes in the physical and climatic conditions of the empire, one of which is seen in shallower harbors and watercourses. To restrain these evils and restore better conditions so far as may be, a law has been enacted, which is warmly commended by the best organs of public opinion, so that the work of the Commission created by the law is more likely to be carried on with spirit and energy and not in a superficial or perfunctory way. Some of the features of the law are outlined in the following letter from the St. Petersburg correspondent of the London *Times*:

"The new law just promulgated extends to all forests, Government, communal and private, which are to be planned out by a special commission appointed by the Ministry of Imperial Domains, and are to be designated protected woods. The timber thus to be protected may be roughly divided under the following heads: (*a*) Growing in shifting sand and obstructing its encroachment on seacoasts, navigable rivers, channels and artificial water courses; (*b*) sheltering towns, settlements, villages, railways, high roads, post roads, cultivated land, and equally such the removal of which might aid the formation of shifting sands; (*c*) protecting the shores of navigable rivers, channels and watercourses from landslips, overflows and damage from floating ice; and, lastly, timber and underwood growing on hillsides, cliffs and slopes, if such be found to avert landslips, detachment of rocks, the formation of snow avalanches and rapid torrents. The measures for carrying the foregoing into effect are intrusted to a commission, which elaborates plans not only for the preservation of standing timber, but likewise for the planting of saplings and the proper and regular thinning of forests. With regard to private woods, the measures issued by the commisson are to be applied with the consent and co-operation of the proprietors, if possible. If, however, the latter are opposed to such measure, the property is purchased by the State at a certain valuation and the necessary plans carried out." The owners have the right, within a certain period, of repurchasing the property for the same price, but with the addition of the cost of introducing the measures and six per cent. per annum on the capital. In other cases the necessary steps can be taken without purchasing the property at the expense of the proprietor. To enforce the observance of the rules laid down by the commission, new penalties have been promulgated against transgressors, particularly as regards plunder of timber, which is carried on throughout the country to an incredible extent."

Planting the Dunes.

FROM Calais to Hamburgh is a long stretch, but for nearly the whole distance the coast line consists of loose sand, now forming flat "links," with a sparse but botanically very interesting vegetation, now blown up into picturesque, irregular hillocks, held together, more or less, by creeping grasses and other plants. In some parts of Kent, in Suffolk and Lincolnshire, the same conditions prevail, but on a smaller scale. However pictorial, or however interesting to the naturalist, such land is, agriculturally, mostly a sterile waste, and it is therefore with no surprise that we learn that the King of the Belgians has interested himself in the matter, and has appointed a commission to study the best means of planting the dunes. We are the less surprised at His Majesty's interest in the matter, as some years ago we were eye-witnesses to the process of digging out His Majesty's villa at Ostend from the sand which had accumulated during the winter above the level of the ground floor windows. The plans for planting the sand hills between Ostend and Blankenberghe have been executed by M. Van der Swaelmen, of Brussels. They are so contrived as to insure protection from the prevailing winds, and when carried out will ultimately form picturesque woods with winding paths, good roads, and other conveniences, which will insure not only an increased agricultural value to the land, but, what is nowadays the most paying of all crops, a crop of villas facing the sea. Those who remember the delightful wood which extends from the Hague to Scheveningen will rejoice that there is now so good a chance of the formation of a similar wood between Ostend and Blankenberghe, a distance of 6 to 7 miles. So far as we are able to judge, M. Van der Swaelmen's plans are admirably adapted to the desired end.—*Gardener's Chronicle.*

Correspondence.

Suggestions for Making a Tennis Lawn.

To the Editor of GARDEN AND FOREST:

Sir.—May I ask you for some instructions about laying down a tennis ground? Being a novice, I should like explicit directions as to leveling, seeding and other details.

Petersville, Michigan. *S. L.*

[Minute and explicit directions for making a tennis lawn cannot well be given that will apply to every case. The question of expense, to begin with, is often the most important element of the problem; but even if this be a minor consideration, there will, usually, be other limitations to meet which good judgment and experience will be required. The climate is the main difficulty that has to be contended with in this country, and the mistake most commonly made is insufficient and superficial preparation of the soil before seeding or sodding. This error not only

greatly increases the expense of maintenance, but prevents the attainment of the best results even with the best of care-taking. With a soil of proper texture and sufficiently fertile, it is only required to follow the directions which have been given in former numbers of this journal for making a good lawn, taking special care to have it firm and level. It often happens, however, that a tennis court is wanted where the soil conditions are unfavorable, and then the proper preparation of the soil may be a difficult and expensive task. This preparation of the soil involves two distinct qualities—its mechanical condition and its chemical composition. The soil should be porous enough to absorb sufficient rain water, and to afford ready passage for roots, and yet compact enough to prevent the water absorbed from quickly draining away and evaporating too rapidly; and it should, also, be so firm as not to be stirred up by the grinding action of feet upon it, which would otherwise break the roots and crowns of the grass. In short, the soil should be porous, and yet have a "binding" quality. Sand is porous, but will not bind. Clay will bind, but is not sufficiently porous. A proper mixture of the two will produce the mechanical quality desired.

It is safe to assume that most soils need enriching. For this purpose there is nothing better than rotted barn-yard manure. But it is often more economical to add a mixture of properly prepared peat, muck or leaf mould and commercial lawn fertilizer, than to use barn-yard manure exclusively. The question as to how much manure should be added to a soil is so much one of expense and judgment, that no definite rule can well be given. An ordinary farm field, in fair condition, may have manure, at the rate of twenty cart loads to the acre, plowed in when it is laid down to grass, and a top-dressing of a like amount every three years or so. Ornamental grounds of large extent, in which a better result is desired, and yet in which a careful economy must be observed, may have at least twice that amount plowed in at the start, and an annual top-dressing of half as much to the acre may be applied. A tennis lawn or any other ground upon which turf is to be maintained, that is subject to much wear, may, however, well have more.

The soil of a tennis lawn should be deep, that the roots of the grass may easily descend to permanent ground moisture, just how deep, up to three or four feet, being a question of expense. The topsoil, or mould, and subsoil of good quality, taken together, should extend to that depth if practicable, in order to retain sufficient moisture to last over droughts. It is more economical in the long run so to prepare the soil in the beginning as to store up natural moisture, than it is to supply it artificially upon the surface when needed.

In some instances, however, there will be, at times, too much natural moisture in the soil, and under-drainage is the remedy for such cases. In the case of stiff, clayey soil, another and very important advantage in under-drainage is to make it more porous and pervious to roots. Drainage is best effected by laying land tiles at least two inches in diameter, at a depth of three or four feet and thirty or forty feet apart, care being taken to give them a sufficient pitch and a proper outlet.

For deep preparation of the soil, trenching should be resorted to. This process consists in throwing back the topsoil on a strip from three to ten feet wide, so as to expose the subsoil, which is then dug up and turned over, or thrown back if it is desired to work more deeply. The lumps are pulverized, clay or muck mixed in, if the original soil is too sandy, or sand and peat, if too clayey, and stones, stumps and roots of large size thrown aside, and all necessary grading and leveling done. Then the topsoil of the next strip is thrown upon the strip of subsoil thus prepared, great care being taken to sift out all the roots of weeds and coarse grasses. And so on.

It not infrequently happens in New England and other parts of the country that have been subjected to glacial action and deposit, that both the topsoil and subsoil consist of dry, coarse sand and gravel, upon which it is almost impossible to maintain good turf, after the ordinary preparation, without an extraordinary amount of manure and almost constant watering during dry weather. In such a case, it is an economy to throw back the soil strip by strip, as for trenching, and to place at a depth of three or four feet below the surface a layer of clay about six inches thick, which may be put in dry, if broken to a fine powder, or, which is usually easier, it may be wet and "puddled"—that is, worked into a comparatively homogeneous mass of mud. In either case it forms an impervious bottom to the lawn, thus preventing the rain which falls or the water which is applied from settling down too deep for the roots of the grass to reach it. The sides should, of course, be left sufficiently porous to allow excessive moisture to drain off.

Another case would be where the soil was almost pure clay, and where no muck or sand or finely divided mineral matter could be obtained without excessive cost. In such a case, the ground having been thoroughly underdrained, the usual way is to mix in almost any sort of vegetable fibre, such as leaves, half decayed twigs, leaf mould from the woods, sods, weeds, the tops and refuse of vegetables, and the like.

After the subsoil has been thoroughly prepared, the topsoil is manured and deeply harrowed several times. The ground should then be leveled, rolled and allowed to settle. If the previous work has been well done, the settlement will be uniform; if it is done late in autumn the ground will become none too firm during the winter, and it should not be deeply plowed, but harrowed and leveled as early in spring as it can be worked. If good sod can be procured, the court will be ready for use as soon as the grass is green. The sods, of equal thickness, should be rolled down very firmly, to bring the grass-roots in close contact with the soil. It is a good plan to sow the seed of Kentucky Blue Grass and the finer varieties of Redtop upon the sod as it is laid, and to repeat this sowing every spring. A dressing of some "complete" fertilizer—that is, one that contains nitrogen, potash and phosphoric acid—can also be applied every spring; or fine manure can be spread over the lawn in autumn, to be raked off in spring. In case no sod can be procured, the seeds of the grasses above named can be sown after the ground is leveled and rolled, then lightly raked in and rolled again. If the seeding is done in early spring, the court can be used the same summer; but no seeded lawn is at its best the first season after sowing. Seed can be sown in early September, if the preparation of the soil has been made several weeks before, so as to allow time for settling.

No pains or expense should be spared to obtain the purest and freshest seed, which can best be done by applying to reputable dealers, who have sufficient call for it to warrant them in keeping it. Much disappointment has come from using inferior seed.—Ed.]

To the Editor of Garden and Forest:

Sir.—I was pleased with your description of the *Shepherdia argentea*, and its bright, eatable berries. We grew it abundantly forty years ago, but found that it had a bad habit of letting its branches get ahead of its roots, causing the trees to fall over when ten or twelve feet high.

A notable object here now is *Citrus trifoliata* in fruit. It bids fair to make one of the best hedge plants. Let me add that *Berberis Thunbergii* makes a good hedge; but, in place of all hedges, give me a fence covered with *Lonicera Halleana*. It is a compact mass and as fresh now as in June. The inevitable gap spoils the hedge, but does not hurt a belt of thick shrubbery, which gives flowers at various seasons. The value of autumn flowers is worthy of consideration. A specimen of *Tamarix Chinensis*, as high as the house, is now waving here its graceful racemes of delicate colored flowers to the slightest breeze. It has been blooming since July and will continue blooming until frost. The large orange flowers of *Tecoma grandiflora* are now at their best and very showy. When grown as a pillar it is most striking, and, in time, will make a tree to support itself.

The new variety of *Magnolia parviflora* is now blooming for the second time this season. For it the word exquisite is no exaggeration. Fancy the pure whiteness and the outer petals of *Eucharis amazonica*, with a closely clustered centre of stamens of bright carmine. Add to this a strong perfume of *Magnolia glauca*, tempered with banana, and the result will justify the epithet. *Spiræa bullata* is now blooming here for the second time this season. The foreign papers are just pronouncing upon its *petite* beauty, and yet it has been in the market here for thirteen years, having been introduced by Thomas Hogg. *S. B. Parsons.*

Flushing, N. Y., Sept. 1st.

Recent Publications.

A Manual of Orchidaceous Plants.—Part III. *Dendrobium, Bulbophyllum and Cirrhopetalum.* James Veitch & Sons, London, 1888.

The third part of this important work is devoted to an account of the different species of the genus *Dendrobium*, occupying 91 of the 102 pages, the remainder treating of the two small allied genera, *Bulbophyllum* and *Cirrhopetalum*. Like its predecessors, this part contains numerous illustrations both of individual flowers of many of the species and of fine specimen plants. Maps of south-eastern Asia, including the islands of the East Indian Archipelago and of Australia, show at a glance the geographical distribution of the principal species of *Dendrobium*, an essentially old world genus, of which *Epidendrum* may be taken as the new world representative. The genus, following Bentham in the *Genera Plantarum*, is divided into seven sections, only the fifth and seventh of which contain plants of horticultural value, most of the showy flowered species seen in gardens belonging to the seventh (*Eudendrobiums*). A hundred species, arranged alphabetically, with many varieties, are described, as well as fourteen artificial hybrid Dendrobiums; for many of these last Orchid-lovers are indebted to the Veitches' indefatigable enterprise and patient experiments, as we have had occasion to remark of another genus in an earlier notice of this publication.

The present part closes with cultural instruction, based upon long and unrivaled experience, and contains much interesting matter relating to the discovery and introduction into cultivation of many of the species described. Its value, however, as a working manual for the botanist or the horticulturist, would be greatly increased were the species numbered, if each part were not paged separately, and if reference numbers had been added to the illustrations. As now printed it will be practically impossible, almost, to quote this work in subsequent publications.

Quince Culture.—An illustrated hand-book for the propagation and cultivation of the Quince, with descriptions of its varieties, insect-enemies, diseases and their remedies by W. W. Meech. New York: Orange Judd & Co. 1888.

This little manual, as the author explains in his preface, is intended "to furnish all needed information for the profitable cultivation of Quinces in all places where they will grow." That the author has accomplished this task satisfactorily all will agree with us in thinking who read the plain and practical information upon the subjects which he undertakes to discuss. And the public will heartily endorse Mr. Meech's wish "that this fruit, for which there is no substitute, be no longer only a luxury within the means of the rich, but become so common and abundant that it may be enjoyed by all." It is certainly a remarkable fact that so little attention, comparatively, has been given to the cultivation of this useful fruit in the United States, and that when it has been grown, so little care has been paid to the proper management of the trees, that will repay generous treatment as to soil and careful pruning. And yet, Quince culture is so simple a matter that its essentials were all comprised in a brief article in this journal on the 18th of July last. That there are not now, however, more than a dozen varieties of the Quince worth cultivating (of these three or four of the best are of African origin) is not due to the fact that attention has not been devoted to the improvement of this fruit, but rather to its fixed character, which Mr. Meech seems to have overlooked. The Quince, of all the fruits cultivated by man during the past twenty or thirty centuries, is the least modified from its wild state; indeed, the flavor of the wild Quince of Persia varies but little from the best varieties of western gardens. Whether it is ever to lose its harsh flavor and become a dessert fruit is a question which future generations of Pomologists must decide. The improvement of the Quince offers a useful field for horticultural effort.

Periodical Literature.

THE city of Ghent has long been famous as one of the great horticultural centres of the world, and its people are now chiefly known for their love of flowers and their successful and profitable cultivation of them. The following historical facts relating to the early horticultural development of this Belgian city, which owes much of its present prosperity to horticulture, collected by the *Revue de l'Horticulture Belge*, and published at the time of the great quinquennial exhibition, lately held in that city, has, therefore, more than a local interest:

1366. On March 1st, 1366, the Burgomasters passed an order that the flower merchants' stands should be placed in the seed market. (The gardeners of Ghent were not an independent guild, but are supposed to have been connected with the fruiterers' corporation. At Bruges there was a guild of market gardeners.)

1464. Hector de Costere, a Captain from Ghent, on his return from a crusade against the Turks, brought the first Shallots from Escalon, and also the *Convolvulus tricolor*.

1518. Isabella, wife of Christian II., King of Denmark, and sister of Charles V., sent gardeners from Ghent to teach the Danes how to sow seeds and cultivate plants and flowers.

1537. After the conquest of Tunis, Charles V. had a collection of Cappadocian Tulips, and one of Roses, among which was the purple Rose of Tunis, planted in the garden of the *Cour du Prince* in Ghent.

1569. A young monk, P. de Rijcke, brought a collection of new and rare plants from South America.

1596. *Fritillaria imperialis* (The Crown Imperial) and *Lilium candidum* were introduced and cultivated for the first time in Ghent.

1598. William de Blasere, Burgomaster of the city of Ghent, and owner of the best known collection of Orange trees in the sixteenth century, introduced the cultivation of Cucumbers. He built the first hot-houses which are mentioned as having been glazed and heated in the country.

1600. When in 1600 the Archdukes made their grand entry into Ghent, the Abbé d'Ername presented to them, among other gifts, two magnificent *Chamærops humilis*. These trees were planted later in the botanical garden, where one was still alive at the beginning of the present century. The trunk of this tree enabled Morren to illustrate the peculiar structure of Palm-stems, and is still in the botanical laboratory of the University at Liège.

1675. The monk Reyntkens, from the Abbey of St. Peter at Ghent, a great lover of flowers, went to Lille to buy plants. They asked him over sixty-five francs, an enormous sum at that time, for a root of *Cyclamen Persicum*. In one of his works Reyntkens credits the moon with being the cause of the rise of sap in plants.

1742. The *Gazette de Gand* announced the first public sale of plants. Anemones, Ranunculus, Hyacinths and Tulips were sold.

1749. A French nurseryman from Orleans came to Ghent with a great variety of fruit trees to sell.

1763. *Rhododendron ponticum*, imported from Gibraltar, was planted at Ghent for the first time.

1772. A gardener named Tontje Verstuyft exposed his flowers for sale on a Sunday in June in the *Place d'Armes*. He returned the next Sunday, and was followed by others. From this period dates the flower market, held in the *Place d'Armes* every Sunday during the summer season.

1773. Up to this time the auction sales of plants and flowers, which took place regularly, rarely attracted others than local horticulturists and amateurs, but when in 1774 a gardener, Judocus Huytens, went to England and returned with new plants, others, inspired by his example, did the same.

1797. On the presentation of a report by Charles van Hulthem and Dr. Bernard Coppens the government and municipality established a botanical garden on the spot occupied by the kitchen garden of the monks of St. Benedict in the Abbey of Bandeloo.

In *Chambers' Journal* for August, a chapter on "Eucalyptus Honey" says: "The existence of this particular honey was made known in 1884 by a French traveler, M. Guilmeth, who, while exploring the island of Tasmania, noticed at the summit

of one of the Eucalypts a peculiar formation which appeared to be a gigantic gall." Discovering it to be a hive, he proceeded to cut down the tree—a specimen which measured seven metres in circumference—and upon tasting the honey discovered, to his surprise, that it "possessed the characteristic odor and flavor of the Eucalyptus essences." Samples sent to France excited the greatest interest. It was found upon analysis to contain about sixty-two per cent. of the purest sugar, and more than seventeen per cent. of the essential constituents of the Eucalyptus—eucalyptol, eucalyptene, cymol and terpene—all of which play an important part in the therapeutics of to-day. Attempts to produce a similar honey by chemical processes have proved vain, as the ingredients gradually separate and volatilize off. The honey itself, therefore, is believed to be destined to become an important medicinal article, for, given in small quantities, it has already proved very efficacious as a mild stimulant and a remedy for diseases of the throat and respiratory organs. Its antiseptic qualities make it valuable also in such diseases as typhoid, and it promises to replace, to a large degree, cod-liver oil. Unfortunately, the bees which produce the Eucalyptus honey are natives of Australasia only, and all attempts to acclimatize them in Algeria and France have been unavailing. In one Algerian district, where the tree has been naturalized, all the flowering crops were cut off, a year or two ago, to ascertain whether the bees of that country could not be forced to make honey from Eucalyptus blossoms; but the only result was the starvation of the bees, and for the present, at least, the sole source whence the honey can be obtained is Australasia. Here, however, it is said that its production will be undertaken as a regular industry.

Notes.

The new Strawberry, "Early Princess," is highly commended by fruit-growers in Minnesota.

Monsieur H. C. Baillon, the distinguished French botanist, has recently been promoted to the grade of officer in the Order of the Legion of Honor.

Mr. Charles Nichols, Superintendent of the Fairmount Cemetery, Newark, who is President of the Association of American Cemetery Superintendents, states in a recent letter that the membership of the Association has been nearly doubled this year.

The extent to which horticulture is pursued for pleasure merely in Belgium, is shown by the membership list of the Ghent Horticultural Society "Harmonie." In the City of Ghent alone it counts 2,000 members, and of these only 30 are professional gardeners.

The largest Sequoia yet found has lately been discovered, says the Amador, California, *Sentinel*, near the headwaters of the Kameah River, on a small basin surrounded on every side by a wall of rugged rocks. The hunter who found it in this almost inaccessible little valley reports that the tree's circumference at a point as high as a man could reach was 160 feet.

Professor Buckhout, of the State College, Pennsylvania, has planted two small plots of ground with forest trees for trial purposes, in connection with the Experiment Station of which Dr. Armsby is Director. One of the plots is on Tussey Mountain, rough and stony, and fairly representing the land which must be dealt with in re-foresting the mountain districts. The other is on the college grounds.

Colonel Pearson writes that the Bordeaux Mixture has proved an efficient preventive of the black rot of the Grape, as well as of Grape mildew. The formula for the mixture, as used this year, is, copper sulphate, six pounds; lime, four pounds, with water to make twenty-two gallons. The lime and sulphate are dissolved separately in hot water, and mixed afterward. With the Eureka Sprayer, made at Vineland, one man can spray five acres a day. If experience corroborates these results elsewhere, the Grape crop of the country can be saved from these two diseases at a trifling expense.

Mr. A. S. Fuller states, in *Orchard and Garden*, that although white varieties have long been known among the native Blackberries, Black Caps, and, in rare instances, among the low bush Huckleberries and Juneberries, there is no record of an albino of our wild red Raspberry (*Rubus strigosus*). Two or three years ago, however, a white Raspberry was detected in McKean County, Pennsylvania, and Mr. Fuller announces that it has fruited with him this summer, the berries being about the same size as the common wild Raspberry; but of a mild flavor, and, in color, almost white, with a slight yellowish tinge when fully ripe.

Dr. Richard Wettstein, according to the *Gardeners' Chronicle*, has published in the *Proceedings* of the Imperial Academy of Science of Vienna the results of his observations on the leaf structure of various reputed hybrids, such as *Pinus Rhætica* ×, a hybrid between *P. montana* and *P. silvestris*; *P. Neilreichiana* ×, between *P. nigricans* and *P. silvestris*; and also various Junipers. The anatomical characters of the foliage of the hybrids in every case are intermediate between those of the reputed parents, and hence lend confirmation to the opinion that the forms examined are really of hybrid origin.

The production of the true Attar-of-Rose was long confined to the Orient, the Levant and the more southerly Balkan provinces. But during recent years the Roses best adapted for the purpose have been largely planted in the more southwesterly parts of Europe, and oil of a good quality has been there produced. One firm in South Germany, for example, imported, not long ago, 15,000 plants from Bulgaria; but the opportunity for such purchases will not again occur. The Bulgarian government, alarmed at the prospect of a competition which would seriously impair one of the most considerable sources of the country's revenue, has made more stringent a long-existing law against the exportation of Roses, fixing as a penalty the confiscation of the seller's real estate.

Mr. C. G. Pringle has completed the collection of wood specimens of the peculiar trees of the lower Rio Grande valley for the Jesup collection in the New York Museum of Natural History, and has now returned to Chihuahua for the purpose of continuing his investigation of the flora of the Sierra Madre. He has succeeded in securing for the museum fine specimens of *Helietta parvifolia, Kœberlinea, Condalia obovata, Acacia flexicaulis*, the Ebony of the Mexican Boundary, *A. Greggii, A. Farnesiana, Pithecolobium brevifolium, Fraxinus cuspidata, Leucæna pulverulenta, Cordia Boessieri, Parkinsonea Texana, P. aculeata*, of the undescribed Palmetto which abounds on the banks of the Rio Grande below Brownsville, and of a very fine new Poplar, which is probably quite generally distributed from Saltillo, in Mexico, to southern New Mexico and Arizona. Mr. Pringle was able to secure for the Kew Museum a large trunk of the gigantic *Yucca filifera*.

"A very beautiful dinner-table decoration," says *The Garden*, "was lately arranged entirely with three varieties of single Roses. In some of the slender upright glasses were flowers in various stages of *Rosa macrantha*, and in others of Hebe's Lip, while below were bunches of the exquisite and delightfully fragrant *R. Brunonis*. The flowers, having been cut in the proper stage, lasted well for two days." Arrangements such as this, of a single kind of flower or of two or three closely related kinds, are certainly in much better taste as table decorations than the masses of mixed blossoms we often see, especially when the summer flower-garden offers its endless varieties for our use; and delicately shaped and colored flowers like single Roses, with their correspondingly dainty foliage, are better in place than the coarser or showier flowers which are usually considered "more effective." Neither in the linen, the glass nor the china with which we furnish our tables is showiness considered the most desirable quality; nor should it be in the flowers we employ.

When the English took possession of the island of Cyprus it was annually ravaged by grasshoppers to such a degree that its crops were hardly worth consideration. In five years, and at a cost of only some $300,000, the insects were almost destroyed, and it now costs but $8,000 a year to keep the land free from their ravages. The method used to such good effect is now being tried, with results which promise to be equally satisfactory, in Algiers and Spain. When a column of grasshoppers is known to be approaching, a screen formed of cotton cloth, about sixty yards in length and one yard in width, is stretched in front of it, sometimes in a straight and sometimes in a V-shaped line. Along the upper edge of the cloth a strip of oiled or varnished stuff is sewn, over which the insects cannot crawl; and in front of it great pits are dug, the borders of which are encircled by strips of zinc slanting downward. These pits are soon filled with the grasshoppers, which are trampled down by bare-footed natives, and buried under earth with which disinfectants are often mixed. According to *Le Génie Civil*, it is estimated that this year four hundred millions of grasshoppers were thus destroyed in Algiers by the middle of June. It is needful that the screens should be spread in the early morning, when the insects, benumbed by the night cold, are unable to fly over it, and that men should be employed to keep the column as compact as possible.